Claims

[1] A method of measuring a distance using an ultrasonic wave, the method comprising steps of:

a) receiving through an ultrasonic sensor a signal generated from an ultrasonic transmitter according to a signal of ultrasonic transmission time;

b) amplifying the received signal;

c) filtering a high-frequency wave from the amplified signal;

d) outputting only a signal corresponding to a predetermined signal size from the signal in which the high-frequency wave is filtered; and

e) computing a distance value by calculating the period of the output signal.

[2] The method according to claim 1, wherein the predetermined signal size is composed of an upper limit and a lower limit, and a signal between the upper limit and the lower limit is not outputted.

[3] The method according to claim 1 or 2, wherein the step of amplifying the received signal carries out amplification in such a way that a noise except for an ultrasonic signal is unsaturated.

[4] A method of measuring a distance using an ultrasonic wave, the method comprising steps of:

a) transmitting a ultrasonic transmission timing to an ultrasonic transmitter through at least one of cable and wireless modes;

b) receiving through an ultrasonic sensor a signal generated from the ultrasonic transmitter according to the ultrasonic transmission timing signal;

c) amplifying the received signal;

d) filtering a high-frequency wave from the amplified signal;

e) storing the time when the filtered signal intersects the predetermined signal levels; and

f) determining as an arrived signal a signal in which a difference between the previous and current values of the stored time continuously occurs repeatedly over a certain number of times within an pre-determined range, and converting the time difference between the signal of ultrasonic transmission time and the arrived signal into a measured distance.

[5] An apparatus for measuring a distance using an ultrasonic wave, the apparatus comprising:

a) an ultrasonic transmitter for transmitting an ultrasonic wave;

b) a means for transmitting a synchronized signal in a cable or wireless mode in order to transmit an ultrasonic transmission signal;

c) an ultrasonic sensor for receiving the ultrasonic signal transmitted from the

ultrasonic transmitter;

d) an amplifier for amplifying the ultrasonic signal received by the ultrasonic sensor;

e) a filter for filtering a high-frequency signal from the amplified signal of the amplifier;

f) a comparator for outputting only a signal corresponding to a predetermined signal size from the filtered signal; and

e) an processing unit for computing a distance value by calculating the period of the output signal.

[6] The apparatus according to claim 5, wherein the comparator has a predetermined signal level composed of an upper limit and a lower limit and is configured so as not to output a signal between the upper limit and the lower limit.